Deep Percolation of Irrigation Water

Possible Improvement

Possible Improvement

Corral Runoff

Possible Improvement

Silage Leachate

Possible Improvement

Solids Accumulation in Pond

Possible Improvements

Possible Improvements

- Other Improvements
  - Flow meters
  - Recirculate wastewater
  - Install gutters
  - Corral grading
- Improvements
  - Current standard for new dairies

Order Requirements

- Whole Farm Assessment
- Waste Management Plan
- Nutrient Management Plan
- Monitoring/Reporting

Order Requirements

- Whole Farm Assessment
  - Storage capacity
  - Nutrient balance
  - Annual updates
- Waste Management Plan
  - Storage capacity
  - Flood protection
  - Runoff controls
  - Operation and Maintenance

Order Requirements

- Nutrient Management Plan
  - Runoff controls
  - Budget and manage nutrients
    - » application rates
    - » application timing

Order Requirements

- Improvements will be needed
  - California Dairy Quality Assurance Program
    - » Training sessions throughout Region
    - » Provide assistance
  - Phases in Waste Management and Nutrient Management Plans

Order Requirements

- Phasing
  - 4 months
    - » Whole Farm Assessment
      - Storage Capacity
      - Nutrient Balance

Order Requirements

- 12 months
  - Propose Interim Modifications
    - » storage capacity/nitrogen balance
  - Production Area
    - Operation and Maintenance Plan
    - Identify backflow problems
  - Land Application Area
    - » Surface water protection measures
      - Propose sampling and analysis

Order Requirements

- 24 months
  - Nutrient Management Plan
    - » Retrofitting Schedule
  - Waste Management Plan
    - » Certify compliance
    - » Propose retrofit schedule
    - » Document backflow corrections
  - Salinity Report

Order Requirements

- 48 months
  - Certify Improvements Complete
    - » Production Area
    - » Land Application Area
- 60 months
  - Nutrient Management Plan
    - » Fully implemented

Order Requirements

- Summary
  - Nutrient Management Plan
    - » 2 years - Complete Plan
    - » 4 years - Complete Improvements
    - » 5 years - Fully Implement
  - Waste Management Plan
    - » 2 years – Complete or Propose Modifications
    - » 4 years – Complete modifications

Order Requirements

- Monitoring
  - Groundwater
  - Storm Water
    - » Land Application Area
  - Discharges/surface water
  - Nutrient applications

Order Requirements

- Groundwater Monitoring
  - All onsite supply wells, subsurface drainage
    - » Nitrate, ammonia, Total Dissolved Solids
- Additional Groundwater Monitoring
  - Install monitoring wells

Order Requirements

- Prioritize Monitoring Wells by
  - Nitrogen in supply wells
  - Proximity to offsite supply wells
  - Location relative to Groundwater Protection Areas and artificial recharge areas
  - Nitrate in neighbor's domestic well
  - Number of crops per field per year
  - Whole Farm Balance
  - Nutrient Management Plan completion

Order Requirements

- Storm Water Monitoring
  - Land Application Area
    - » Two times per year
    - » Field parameters and nitrogen compounds, total dissolved solids, biochemical oxygen demand, and coliform

Order Requirements

- Discharge Monitoring
  - Waste/Storm Water from Production Area
  - Waste from Land Application Area
- Surface Water Monitoring
  - Upstream/downstream of discharge

Order Requirements

- Nutrient Monitoring
  - Nutrient Concentrations
    - » Wastewater, solid manure, soil, irrigation water, crops harvested, wastes exported
  - Nutrients Applied
    - » Wastewater, solid manure, irrigation water
  - Nutrients Removed
    - » Crops harvested, wastes exported

Order Requirements

- Reporting
  - Noncompliance
  - Groundwater/Storm Water Results
  - Annual reports
    - » Update Whole Farm Assessment
    - » Number of cows
    - » Estimate nutrients generated/applied/removed

Issues

- Groundwater Monitoring
- Pond Construction
- Monitoring Costs

Pond Construction

- Title 27
  - 10% clay/no more than 10% gravel
- BVA Report
  - Title 27 insufficient to protect groundwater
  - Maximum seepage rate
    - » 1 x 10^{-6} cm/sec
    - » Consistent with Natural Resources Conservation Service Guidelines

Pond Construction

- Order Would Require
  - New Ponds/Reconstructed Existing Ponds
    - » Pond seepage rate no more than 1×10^{-6} cm/sec
    - » Demonstrate groundwater quality protection
  - Retrofit existing ponds
    - » Monitoring shows impacts

Pond Construction

- Demonstration of groundwater protection
  - Calculations
    - » amount and quality of seepage
    - » effect on groundwater quality

Pond Construction

- Issue
  - Prescriptive standard requested
- Prescriptive standard not appropriate
  - site specific conditions important
    - » depth to groundwater
    - » soil types
    - » existing groundwater quality
    - » pollutant concentrations in seepage

Need for Monitoring

- Water Quality Monitoring
  - Establish existing conditions
  - Demonstrate compliance
  - Demonstrate improvements
- Nutrient Monitoring
  - Information for nutrient budget
- Discharge Monitoring
  - Impact to water quality

Monitoring Costs

	1st Year Capitol Costs	Annual Monitoring Costs
March 2006 Draft Order	$34,800	$43,196
March 2006 Revised Draft Order	$34,800	$34,940
Tentative Order	$14,000	$39,068

2004 Milk Production

	Billion Pounds	Billion Dollars
Entire State	36.4	5.4
Sacramento Valley	12.0	1.8
San Joaquin Valley	18.6	2.7

Source: Calif. Dept. of Food and Agriculture

Dairy Income & Costs

	Average North Valley Dairies	Average South Valley Dairies
Costs ($/cow/month)	222.89	247.87
Income ($/cow/month)	203.74	214.94

Source: Calif. Dept. of Food and Agriculture
Second Quarter 2006 Data

Closing Points

- Order
  - Will apply to 1500+ existing facilities
  - Does not apply to new/expanding dairies
- Management of Waste, Nutrients and Water
  - Exceeds Federal Regulations

Closing Points

- Reduces nutrient and salt loading
- Addresses legacy water quality issues
- Waste Management and Nutrient Management Phased In

Closing Points

- Monitoring to demonstrate compliance

Written Comments Due January 16


STATE OF CALIFORNIA
CENTRAL
VALLEY
REGION
REGIONAL WATER QUALITY CONTROL BOARD